CONFIDENTIAL

10 December 1959

LAUNCH INSTRUCTIONS FOR RADAR SYSTEM

INTRODUCTION: A forty-five foot long one mil "mylar" cylinder balloon is to be used to carry a radar reflective sphere to 50,000 feet pressure altitude. The sphere is to be inflated as full as possible on the ground and vent excess gas to the tow balloon as they ascend. At altitude both balloons will be superpressured.

DESCRIPTION: Two complete systems (two cylinders and two spheres) are included. Since the spheres are of different diameters the venting valve in the two cylinders must operate at different pressures. It is vital that the twenty-four inch diameter sphere be used with the cylinder equipped with the 20 mb relief valve and that the forty-four inch diameter sphere be used with the cylinder equipped with the eight mb relief valve. Failure to do this will probably cause the forty-four inch diameter sphere to burst and the twenty-four inch diameter sphere to be slack on ascent.

DIRECTION FOR USE: Since the free lift is a critical factor in this system the balloon should be prepared for launching under shelter or near zero wind conditions.

A. System with twenty-four inch sphere

1. Lay out the polyethylene ground protection cover. This sheet of red material is packed with the balloons, no other type of material should be used. The polyethylene should be spread out on the ground to prevent any contact between the mylar cylinder balloon and the ground.

2. Remove a length of approximately 10 feet of the balloon from the polyethylene bag. This should expose a section of the balloon that is wrapped with a nylon rope. Tie the end of the nylon rope to the top of the polyethylene bag. This will allow inflation of the balloon at one end while the other end remains protected by the bag. The cylinder balloon should be constrained at this point during inflation. Removing the ten foot length will also expose the inflation fitting.

3. Remove the cap from the inflation fitting and attach the inflation hose from the hydrogen cylinder. Inflate with gas until the system is in exact quilibrium. Care must be exercised to insure that exact quilibrium exists when the hose is removed and the cap is replaced.

4. Remove the remainder of the balloon from the polyethylene bag. Discard the bag. The attachment for the sphere will now be exposed.

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5. Inflate the sphere until it is full and slightly hard. Attach the sphere to the balloon trying to allow as little gas to escape as possible during the process. Leave the white tape and the weight on the end of the sphere balloon fitting.

6. To launch, remove the rope tied around the cylinder balloon.

B. System with forty-four inch sphere

1. Lay out the ground protection polyethylene cover as before.

2. Remove about a ten foot length of the cylinder balloon from the polyethylene bag as before. Tie the bag to the balloon.

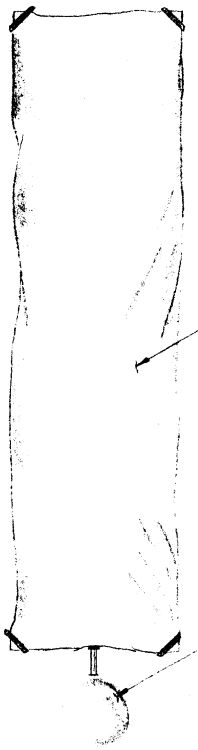
3. Inflate the sphere leaving the white tape and the weight on the fitting and put the tape over the end of the fitting to temporarily retain the gas. Tie the fitting to the rope that is holding the polyethylene bag to the balloon.

4. Inflate the cylinder balloon as before.

5. Remove polyethylene bag.

6. Remove the sphere from its position and attach it to the proper fitting at the base of the cylinder balloon.

7. To launch remove the rope.



TOW BALLOON
(10308)

RADAR REFLECTIVE SPHERE
(10009 & 10010)

C. S. NUMBER	DATE	REV. LETTER	FORMERLY	DATE	ENIT.	CHECK

TOLERANCES UNLESS OTHERWISE NOTED:
FRACTIONAL ± 1/64 DECIMAL ± .005 ANGULAR ½°

REMOVE ALL SHARP EDGES

ASSEMBLY NO.	NO. REQ'D

MATERIAL: SEE DWG'S IN ( )

SCALE: NONE

PROJECT
DRAWN
CHECK
CERTIFY

25X1

TITLE: RADAR SYSTEM ASS'Y

DRAWING IDENTIFICATION SIZE	NUMBER	REV.
B	10315	

25X1

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INTRODUCTION: A forty-five foot long one mil "Mylar" cylinder balloon is to be used to carry a radar reflective sphere to 50,000 feet pressure altitude. The sphere is to be inflated as full as possible on the ground and vent excess gas to the tow balloon as they ascend. At altitude both balloons will be superpressured.

DESCRIPTION: Two complete systems (two cylinders and two spheres) are included. Since the spheres are of different diameters the venting valve in the two cylinders must operate at different pressures. It is vital that the twenty-four inch diameter sphere be used with the cylinder equipped with the 20 mb relief valve and that the forty-four inch diameter sphere be used with the cylinder equipped with the eight mb relief valve. Failure to do this will probably cause the forty-four inch diameter sphere to burst and the twenty-four inch diameter sphere to be slack on ascent.

DIRECTION FOR USE: Since the free lift is a critical factor in this system it should be prepared for launch under near zero wind conditions.

I. System with twenty-four inch sphere

1. Lay out ground cloth. (polyethylene)

2. Pull balloon from bag stopping at the rope tied around the balloon. Tie this rope around top of polyethylene bag with remainder of balloon in bag.

3. Remove cap from inflation fitting and attach inflation hose from hydrogen cylinder. Add gas until system is in exact equilibrium. Care must be exercised not to over inflate, but nevertheless bring the balloon to equilibrium with hose removed and inflation cap replaced.

4. Remove remainder of balloon from polyethylene bag to expose bottom fitting for attachment of sphere.

5. Inflate sphere as completely as possible (but not hard) and attach to cylinder fitting making every effort to lose as little gas as possible from the sphere during this process. Leave white tape and weight on end of sphere balloon fitting.

6. To launch remove rope tied around cylinder balloon.

II. System with forty-four inch sphere

1. Lay out ground cloth.

2. Pull balloon from bag stopping at the rope tied around the balloon. Tie this rope around top of polyethylene bag with remainder of balloon in bag.

3. Inflate sphere leaving white tape and weight on fitting and put tape over end of fitting to retain gas. Tie fitting to rope holding polyethylene bag and remaining cylinder balloon.

4. Remove cap from inflation fitting and attach inflation hose from hydrogen cylinder. Add gas until system is in exact equilibrium. Care must be exercised not to over inflate, but nevertheless bring the balloon to equilibrium with hose removed and inflation cap replaced.

5. Remove remainder of balloon from polyethylene bag to expose bottom fitting for attachment of sphere.

6. Remove sphere from previous position and attach to bottom of cylinder.

7. To launch remove rope tied around cylinder balloon.

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Volume Cylinder 609 ft^3

14" Sphere 25.8 ft^3 (634.8 ft^3

24" Sphere 4.185 ft^3 - (613.2) ft^3

H_2 Spec Lift @ 50KFT = .0108 #/ft^3

" " @ M.S.L = .071

44" system weight = 6.86 # (6 * 13 3/4 #)

free lift =

24" system weight = 6.62 # (6 * 10 #)

pls file

Balloon Gen'l

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